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Direct sums of injective semimodules and direct products of projective semimodules over semirings

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Abstract

We prove that if the direct sum of a family of semimodules over a semiring S is an injective semimodule or if the direct product of a family of semimodules over S is a projective semimodule, then the cardinality of the subfamily consisting of all semimodules which are not modules is strictly less than the cardinality of S . As a consequence, we obtain semiring analogs of well-known characterizations of classical semisimple, quasi-Frobenius, and one-sided Noetherian rings. © 2010 Allerton Press, Inc.

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Keywords

Injective semimodule, Projective semimodule, Semiring